



## ON-BOARD DC-DC CONVERTER ENCAPSULATED MODULES 10 WATTS SINGLE & DUAL OUTPUT HDM10-S & HDM10-D SERIES



### FEATURES:

- LOW COST SINGLE & DUAL OUTPUT.
- 2:1 & HIGH INPUT RANGE.
- 10W ISOLATED OUTPUT.
- SIX-SIDED METAL SHIELD.

### SPECIFICATION

#### INPUT SPECIFICATION

**Input Range:** 2:1 DC input range,  
High input voltage up to 140Vdc.  
See Ratings Chart.

**Input Voltage:** Nominal 12/24/48/96Vdc.

**Input Current:** Various with input range & load.  
See Ratings Chart.

**Input Fuse:** Use external fuse.

**Input Filter:** Pi-Network.

**Isolation Resistor:** 1,000 Mega Ohms.

**Isolation Voltage:** 1,500Vdc.

**EMI:** Six-sided metal shielding.

#### OUTPUT SPECIFICATION

**Output Voltage:** See Ratings Chart.

**Output Current:** See Ratings Chart

**Voltage Accuracy:** Main O/P  $\pm 2.0\%$  typ.

**Line Regulation:**  $\pm 0.5\%$  typ.

**Load Regulation:** Single O/P  $\pm 1.0\%$  typ  
Dual O/P  $\pm 2.0\%$  typ.

**Noise & Ripple:** Typ. 100mV for 3.3V/5.0V &  
1.0% for others peak to peak.

**OVP:** Built-in on main output.

**Short Circuit Protection:** Power fold back,  
Self-recovering.

**Overload Protection:** About 130% of overrange  
by foldback type.

#### GENERAL SPECIFICATION

**Efficiency:** Typ. 65-75%, various with input.

**Switching Frequency:** 40-70K Hz. various with  
input and loading condition.

**Circuit Topology:** Free Running Flyback Circuit.

**Transient Response:** Full to 1/2 load  $< 200 \mu\text{Sec}$ .

**Case:** Black coated steel with non-conductive  
metal base.

**Weight:** 108.0g (3.8 Oz.)

**Power Density:** 5Watts./ Cubic inch.

**Operating Temperature:**  $-25^{\circ}\text{C}$  to  $+71^{\circ}\text{C}$  range.  
 $-20^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$  @ full load without derating.

**Temperature:**  $-40^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$ .

**Temperature Coefficient:**  $0.02\% / ^{\circ}\text{C}$ .

**Cooling:** Convection cooling up to  $+60^{\circ}\text{C}$  @ full load.  
At least 100LFM moving air is recommended for F-L  
>  $+60^{\circ}\text{C}$  in a confined area.

**Humidity:** Up to 95%RH, Non-condensing.

**Commercial Grade only.**

**NOTE:** (1) All measurements are at nominal input, full load, and  $+25^{\circ}\text{C}$  unless otherwise specified.

(2) Line Regulation measured from High to Low Lines at full load.

(3) Load Regulation measured from Full Load to 1/2 Full Load at nominal input.

(4) Correct fuse size by calculating the max. DC current drain at low Line input & Load and then adding 20-25% for the desired fuse size.

# INPUT/OUTPUT & VOLTAGE/CURRENT RATINGS CHART

## SINGLE OUTPUT

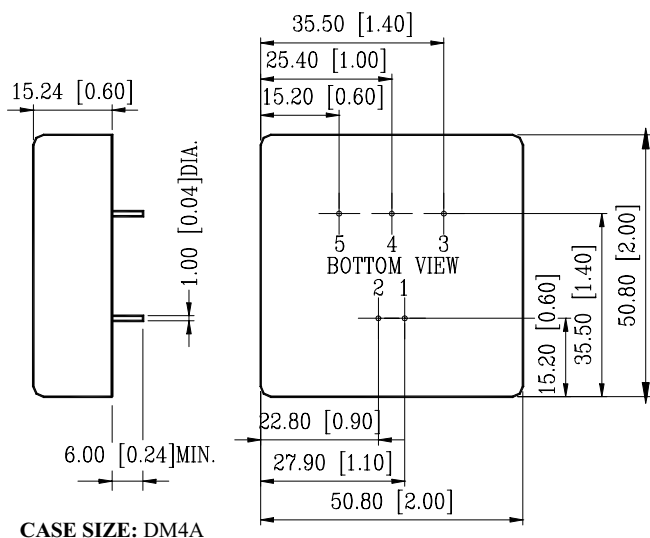
| MODEL NO.     | INPUT Vdc   | INPUT CURRENT<br>N. L. (mA) F.L. |      | OUTPUT VO1(Vdc) | OUTPUT VO1(A) | CASE SIZE |
|---------------|-------------|----------------------------------|------|-----------------|---------------|-----------|
| HDM10-12B-S03 | 9.0- 18.0   | 60                               | 800  | 3.3V            | 2.00A         | DM4A      |
| HDM10-12B-S05 | 9.0- 18.0   | 60                               | 1180 | 5.0V            | 2.00A         | DM4A      |
| HDM10-12B-S09 | 9.0- 18.0   | 60                               | 1180 | 9.0V            | 1.12A         | DM4A      |
| HDM10-12B-S12 | 9.0- 18.0   | 60                               | 1180 | 12.0V           | 0.85A         | DM4A      |
| HDM10-12B-S15 | 9.0- 18.0   | 60                               | 1200 | 15.0V           | 0.70A         | DM4A      |
| HDM10-12B-S24 | 9.0- 18.0   | 60                               | 1350 | 24.0V           | 0.50A         | DM4A      |
| HDM10-24B-S03 | 18.0- 36.0  | 30                               | 400  | 3.3V            | 2.00A         | DM4A      |
| HDM10-24B-S05 | 18.0- 36.0  | 30                               | 590  | 5.0V            | 2.00A         | DM4A      |
| HDM10-24B-S09 | 18.0- 36.0  | 30                               | 590  | 9.0V            | 1.12A         | DM4A      |
| HDM10-24B-S12 | 18.0- 36.0  | 30                               | 590  | 12.0V           | 0.85A         | DM4A      |
| HDM10-24B-S15 | 18.0- 36.0  | 30                               | 600  | 15.0V           | 0.70A         | DM4A      |
| HDM10-24B-S24 | 18.0- 36.0  | 30                               | 675  | 24.0V           | 0.50A         | DM4A      |
| HDM10-48B-S03 | 36.0- 72.0  | 20                               | 200  | 3.3V            | 2.00A         | DM4A      |
| HDM10-48B-S05 | 36.0- 72.0  | 20                               | 295  | 5.0V            | 2.00A         | DM4A      |
| HDM10-48B-S09 | 36.0- 72.0  | 20                               | 295  | 9.0V            | 1.12A         | DM4A      |
| HDM10-48B-S12 | 36.0- 72.0  | 20                               | 295  | 12.0V           | 0.85A         | DM4A      |
| HDM10-48B-S15 | 36.0- 72.0  | 20                               | 300  | 15.0V           | 0.70A         | DM4A      |
| HDM10-48B-S24 | 36.0- 72.0  | 20                               | 338  | 24.0V           | 0.50A         | DM4A      |
| HDM10-96A-S03 | 72.0- 140.0 | 10                               | 100  | 3.3V            | 2.00A         | DM4A      |
| HDM10-96A-S05 | 72.0- 140.0 | 10                               | 146  | 5.0V            | 2.00A         | DM4A      |
| HDM10-96A-S09 | 72.0- 140.0 | 10                               | 146  | 9.0V            | 1.12A         | DM4A      |
| HDM10-96A-S12 | 72.0- 140.0 | 10                               | 146  | 12.0V           | 0.85A         | DM4A      |
| HDM10-96A-S15 | 72.0- 140.0 | 10                               | 150  | 15.0V           | 0.70A         | DM4A      |
| HDM10-96A-S24 | 72.0- 140.0 | 10                               | 169  | 24.0V           | 0.50A         | DM4A      |

## DUAL OUTPUT

| MODEL NO.     | INPUT Vdc   | INPUT CURRENT<br>N. L. (mA) F.L. |      | OUTPUT(Vdc) |        | OUTPUT(A) |       | CASE SIZE |
|---------------|-------------|----------------------------------|------|-------------|--------|-----------|-------|-----------|
|               |             |                                  |      | +VO1        | -VO2   | +VO1      | -VO2  |           |
| HDM10-12B-D05 | 9.0- 18.0   | 50                               | 1200 | +5.0V       | -5.0V  | 1.00A     | 1.00A | DM4       |
| HDM10-12B-D12 | 9.0- 18.0   | 50                               | 1200 | +12.0V      | -12.0V | 0.42A     | 0.42A | DM4       |
| HDM10-12B-D15 | 9.0- 18.0   | 50                               | 1200 | +15.0V      | -15.0V | 0.35A     | 0.35A | DM4       |
| HDM10-24B-D05 | 18.0- 36.0  | 30                               | 600  | +5.0V       | -5.0V  | 1.00A     | 1.00A | DM4       |
| HDM10-24B-D12 | 18.0- 36.0  | 30                               | 600  | +12.0V      | -12.0V | 0.42A     | 0.42A | DM4       |
| HDM10-24B-D15 | 18.0- 36.0  | 30                               | 600  | +15.0V      | -15.0V | 0.35A     | 0.35A | DM4       |
| HDM10-48B-D05 | 36.0- 72.0  | 20                               | 300  | +5.0V       | -5.0V  | 1.00A     | 1.00A | DM4       |
| HDM10-48B-D12 | 36.0- 72.0  | 20                               | 300  | +12.0V      | -12.0V | 0.42A     | 0.42A | DM4       |
| HDM10-48B-D15 | 36.0- 72.0  | 20                               | 300  | +15.0V      | -15.0V | 0.35A     | 0.35A | DM4       |
| HDM10-96A-D05 | 72.0- 140.0 | 10                               | 150  | +5.0V       | -5.0V  | 1.00A     | 1.00A | DM4       |
| HDM10-96A-D12 | 72.0- 140.0 | 10                               | 150  | +12.0V      | -12.0V | 0.42A     | 0.42A | DM4       |
| HDM10-96A-D15 | 72.0- 140.0 | 10                               | 150  | +15.0V      | -15.0V | 0.35A     | 0.35A | DM4       |

## MECHANICAL DIMENSIONS: MM [INCHES]

Weight: 108.0g (3.8 Oz.)



## PIN ASSIGNMENT

| PIN NO. | SINGLE  | DUAL    |
|---------|---------|---------|
| PIN #1  | - INPUT | - INPUT |
| PIN #2  | + INPUT | + INPUT |
| PIN #3  | DC-COM  | -VO2    |
| PIN #4  | NC      | DC-COM  |
| PIN #5  | VO1     | + VO1   |